

## EENS Job Risk Assessment

<b>Name(s) of Risk Team Members:</b> P. Carr; J. Peters; J. Boccio; L. Bowerman, B. Dong, D. Elling; D. Chidambaram; N. Contos; J. Madaia; W. Brown	<b>Point Value</b> → <b>Parameter</b> ↓	1	2	3	4	5
<b>Job Title: Work with chemicals in laboratories</b>  <b>Job Number or Job Identifier:</b> EENS-JRA-008  <b>JRA Date:</b>	<b>Frequency (B)</b>	≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift
<b>Job Description:</b> Handling chemicals; many include any of the following hazards: Carcinogens, Highly acute Toxin, Reproductive toxins, Corrosives, Strong Oxidizers, Highly Reactive Materials, Perchlorates, Oils, Explosives, Peroxide forming, Pyrophoric Materials, PCBs, Pesticides/herbicides, Asbestos, & Controlled substances	<b>Severity (C)</b>	First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability
<b>Training Procedures List (Optional):</b> Laboratory Standard	<b>Likelihood (D)</b>	Very Unlikely	Unlikely	Possible	Probable	Multiple
<b>Approved by:</b> <b>Date:</b> <b>Rev. #:</b> Draft						
<b>Stressors (if applicable, please list all) (1) Environmental Temperature; (2) Time</b>		<b>Reason for Revision (if applicable):</b>			<b>Comments:</b>	

			Before Additional Controls							After Additional Controls						
Activity	Hazard	Control(s)	Stressor	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	Control(s) Added to Reduce Risk	Stressors	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	% Risk Reduction
Storing containers	Fire; Explosion; spill; chemical reactions; exposure via inhalation	Segregation of hazard types; flammable and acid cabinets; guidance in Working with Chemicals Subject Area; CMS; work planning procedures (ESR); PPE; area monitoring; fume hood/ventilation; secondary containment; spill response; use of safer substitutes; Tier 1	Y <sup>1</sup>	1	4	2	2	16								

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			Stressor	# of People A	Frequency B	Severity C	Likelihood D		Stressors	# of People A	Frequency B	Severity C	Likelihood D	
		inspections; container labeling; area posting; shelf-life monitoring; containers specific for the hazard and operation; temperature control, training, condition of container												
Moving containers within the lab	spillage via tripping/dropping; explosion; exposure; reaction	guidance in Working with Chemicals Subject Area CMS; work planning procedures (ESR); PPE; area monitoring; personnel monitoring; secondary containment; spill response; Tier 1 inspections; container labeling; containers specific for the hazard and operation; training; condition of container	N	1	5	2	3	30						
Measuring chemicals- pipeting; weighing; filling sample cells, etc.	spillage; exposure to vapors, mists, dusts	<b>drop pads</b> ; guidance in Working with Chemicals Subject Area; CMS, work planning procedures (ESR); PPE; area monitoring; personnel monitoring; use of small volumes; fume hood/ventilation; secondary containment; spill response; use of safer substitutes; Tier 1 inspections; container labeling; area posting; containers specific for the hazard and operation; training;	N	1	4	2	2	16						
Mixing, reacting; & synthesizing hazardous substances	uncontrolled reactions; exothermic reaction; explosions; exposure to	guidance in Working with Chemicals Subject Area; CMS, work planning procedures (ESR); PPE; area monitoring; personnel monitoring; use of small volumes; fume hood/ventilation; secondary	Y <sup>2</sup>	1	4	3	3	36						

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			Stressor	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD		Stressors	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	
	vapors, mists, dusts; creation of unknown hazards; spills	containment; spill response; use of safer substitutes; container labeling; area posting; <b>reactions vessels specific for the hazard</b> ; training; environmental controls														
Distilling & rotovap of hazardous substances	uncontrolled reactions, exothermic reaction, exposure to vapors, mists, dusts; over-pressurization; vacuum failure	guidance in Working with Chemicals Subject Area; CMS, work planning procedures (ESR); PPE; area monitoring; personnel monitoring; use of small volumes; fume hood/ventilation; secondary containment; spill response; use of safer substitutes; Tier 1 inspections; container labeling; area posting; <b>reactions vessels specific for the hazard</b> ; training; equipment inspection	N	1	3	4	3	36								
Using controlled substances	exposure to vapors, mists, dusts	SBMS <i>Controlled Substances</i> plus all controls of hazardous chemicals as appropriate; training	N	1	4	2	2	16								
Analysis by instrumentation such as HPLC, GC, ICP, AA, MS, electrodes, thermometer	exposure to vapors, mists, dusts; liquids; over-presurization; spill; puncture from syringe	guidance in Working with Chemicals Subject Area; CMS, work planning procedures (ESR); PPE; area monitoring; personnel monitoring; use of small volumes; fume hood/ventilation; secondary containment; spill response; use of safer substitutes; container labeling; area posting; containers specific for the hazard and operation; training; equipment specific documentation as appropriate	N	1	4	2	2	16								

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Handling, storing, testing, and distilling <i>peroxide forming compounds</i>	rupture of container; exposure to vapors; explosion; spillage via tripping/dropping difficulty opening container	<b>Periodic testing and labeling as per SBMS WWC;</b> CMS, work planning procedures (ESR), PPE; area monitoring; personnel monitoring; use of small volumes; fume hood/ventilation; secondary containment; spill response; use of safer substitutes; Tier 1 inspections; container labeling; shelf-life monitoring; containers specific for the hazard and operation; training; periodic cleaning of top during testing (moist rag)	N	1	2	4	3	24								
Toxic metals	Exposure to dusts, spills, fire	Guidance in Working with Chemicals Subject Area; work planning procedures (ESR); CMS; PPE; area monitoring; personnel monitoring; fume hood/ventilation; spill response; Tier 1 inspections; container labeling; containers specific for the hazard; training														
Corrosives & Strong Oxidizers	Burns; spills; exposure; reactions	Guidance in Working with Chemicals Subject Area; work planning procedures (ESR); CMS; PPE; separation of non-compatibles; container labeling; spill response; condition of container use of small volumes; fume hood/ventilation; area postings; Tier 1 inspections; containers specific for the hazard; training; acid cabinet														

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Flammable/combustible material	Fire; spills; exposures; reactions	Guidance in Working with Chemicals Subject Area; work planning procedures (ESR); CMS; PPE; separation of non-compatibles; container labeling; ; spill response; condition of container use of small volumes; fume hood/ventilation; area postings; Tier 1 inspections; containers specific for the hazard; training; flammables cabinet												
Handling, storing, testing <i>pyrophoric compounds</i>	Explosion; exposure to vapors, dust, mists, fumes; rupture of container; fire; spillage via tripping/dropping;	guidance in Working with Chemicals Subject Area; CMS, work planning procedures (ESR); PPE; area monitoring; personnel monitoring; use of small volumes; fume hood/ventilation; secondary containment; spill response; use of safer substitutes; Tier 1 inspections; container labeling; shelf-life monitoring; containers specific for the hazard and operation; training; Class D fire extinguisher; environmental controls; container condition	N	1	3	3	3	27						
Handling, storing, testing <i>sensitizers; acute toxins; carcinogens; &amp; reproductive toxins</i>	exposure to vapors; dust, mists, fumes; liquids; fire; spillage via tripping/dropping; explosions, container failure	guidance in Working with Chemicals Subject Area; CMS, work planning & ESR, procedures; PPE; area monitoring; personnel monitoring; use of small volumes; fume hood/ventilation; secondary containment; spill response; use of safer substitutes; Tier 1 inspections; container labeling;	N	1	3	4	3	36						

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			Stressor	# of People A	Frequency B	Severity C	Likelihood D		Stressors	# of People A	Frequency B	Severity C	Likelihood D	
		area posting; containers specific for the hazard and operation; training; condition of container; environmental controls												
Transporting of chemicals to other locations within a building	spillage via tripping/dropping;; exposure to vapors, mists, dusts	work planning procedures (ESR); PPE; secondary containment; spill response; container labeling; containers specific for the hazard and operation; training; condition of container & cart; segregation; ensure container stability	Y <sup>1</sup>	1	3	2	3	18						
Transporting of chemicals to other locations outside a building but within BNL	spillage via tripping/dropping; exposure to vapors, mists, dusts	See JRA-												
Transporting of chemicals to other locations outside of BNL	spillage via tripping/dropping; exposure to vapors, mists, dusts	See JRA-												
Further Description of Controls Added to Reduce Risk:														
*Risk:	0 to 20 Negligible	21 to 40 Acceptable	41 to 60 Moderate		61 to 80 Substantial		81 or greater Intolerable							